

SUBJECT: LA-6 Model

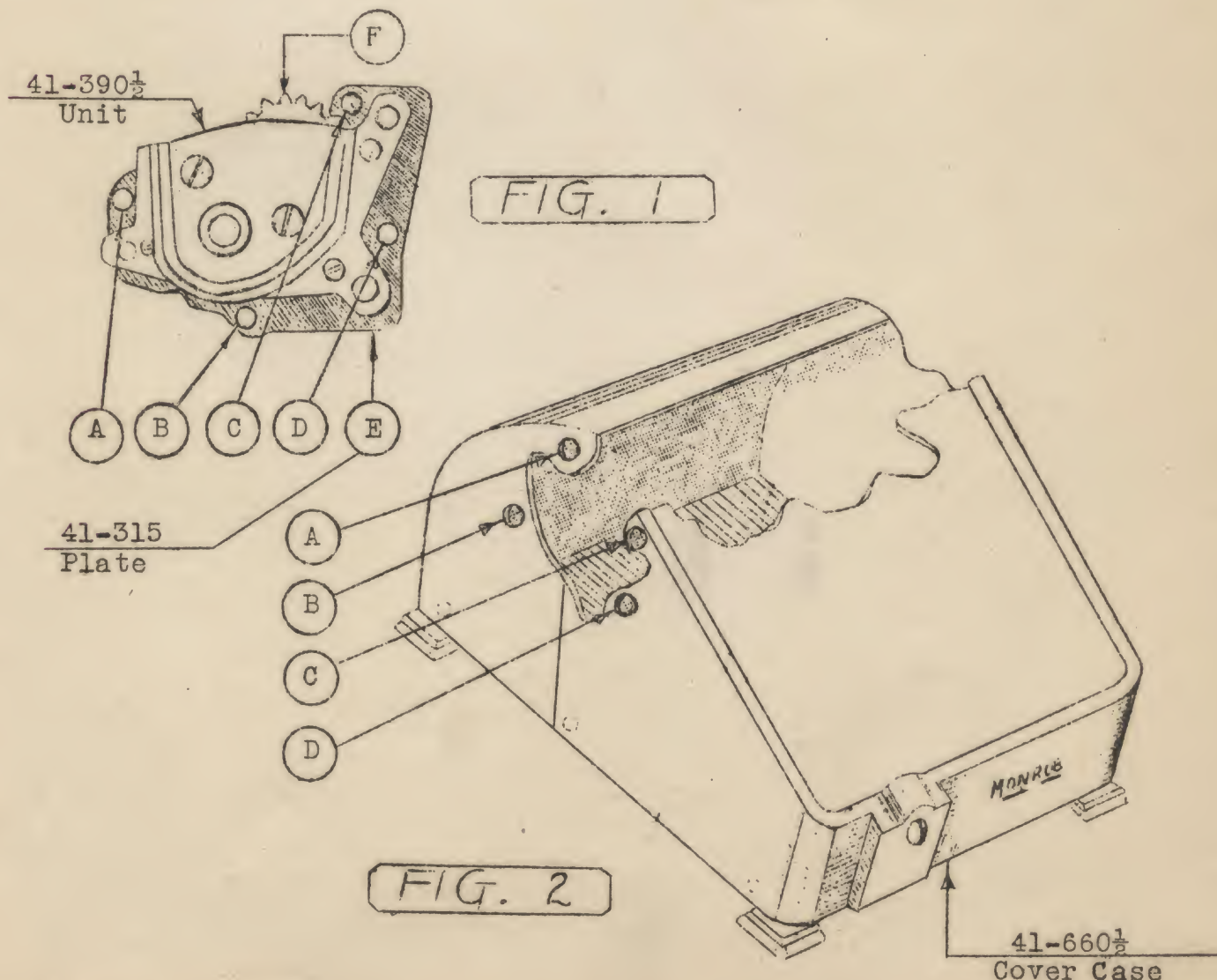
DATE: March 1 , 1934

TO ALL OFFICES:-

This Bulletin supplies detailed supplementary information to that issued in Machine Service Bulletins No. 161, Supplements A, B, C and D, and 165, 167 and 177.

Cover Case:

The fastening of the machine cover case, 41-660 $\frac{1}{2}$, to the through carry unit, 41-390 $\frac{1}{2}$, with screws 50506 through holes (A), (B), (C) and (D) may disturb the correct alignment of the extreme left hand extra carry gear (F) with the intermediate gears. This is due to the strain set up by the tightening of these screws. Machines in perfect operating condition often function improperly on account of this. Therefore, the use of shim washers between the end plate (E) and the cover case was resorted to. However, a change has been made in the cover case which eliminates holes (A), (B), (C) and (D) and omits the use of screws 50506.



Carrying Dogs:-

An improvement has been made in the carrying dogs by adding a small amount of stock on the top of the dogs at the points where they contact the feet of the wedges. See (B) and (D), Figure 6. In LA-6 models, due to the use of round tooth gears in the extra carry unit, it is necessary to set a slightly higher mesh between the dial gears and intermediate gears than in other L models. This higher mesh causes the wedges (A) to be depressed slightly later by the carrying pins than with the deep mesh, and we have found that this delay, even though it is slight, causes the wedges, when they are depressed, to strike the top of the dogs rather than to drop in front of them. In order to overcome this condition, we have added a small amount of metal to the top of the dogs so that the delay in depressing the wedge is compensated.

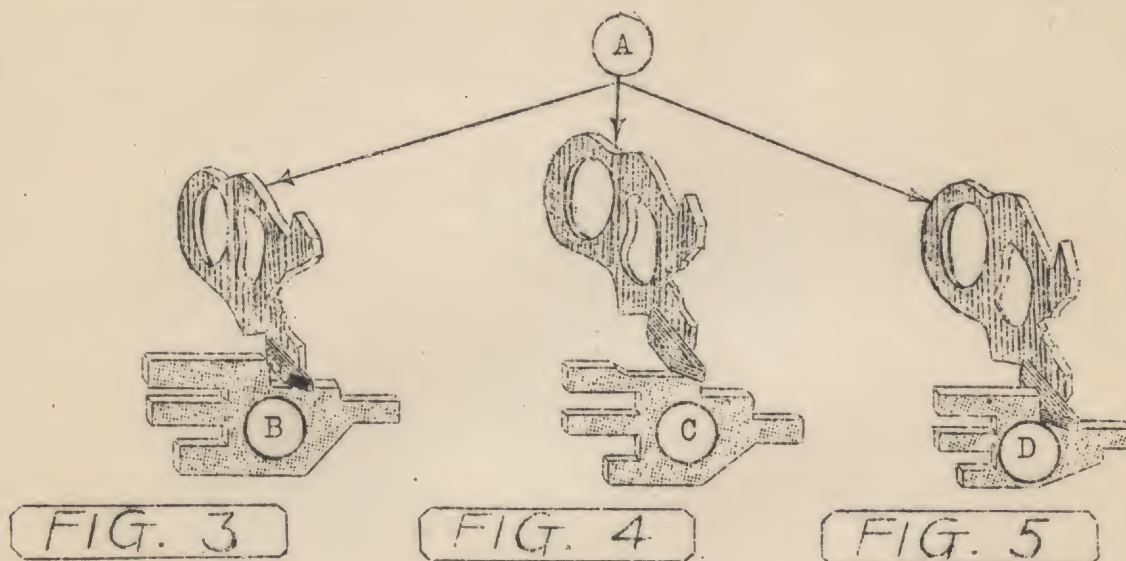
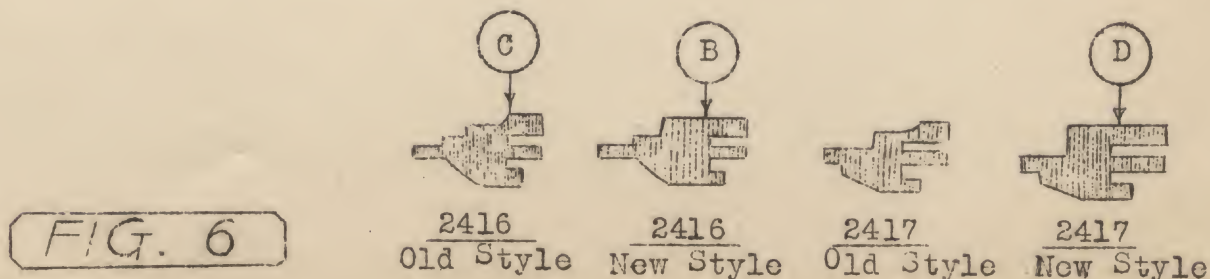


Figure 3 illustrates the correct engagement of wedges (A) with the new style 2416 dogs (B).

Figure 4 shows the incorrect condition caused by the wedges (A) dropping late and riding on top of the 2416 old style dogs (C).

Figure 5 illustrates the correct engagement of the wedges (A) with the new style 2417 dogs (D).



Incorrect Figure Registers When The Constant is Being Set Into The Carriage:-

Set screw (A) has been provided to limit the movement of the trip rod (H) when the constant key is depressed.

If the correct number is not registered when setting the constant into the carriage and the machine is without this feature, install screw (A) and nut (B) by following the instructions listed below. NOTE: After installing screw (A) and nut (B), if the correct number does not register when setting the constant into the carriage, adjust screw (A) up or down until the trouble is corrected.

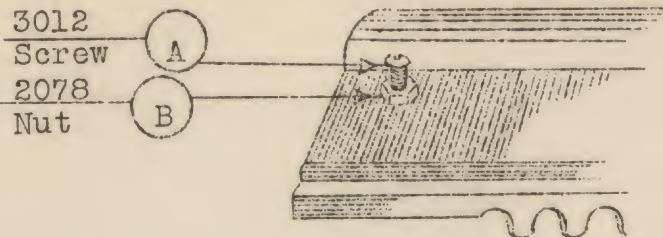


FIG. 7

- 1 - Position the rocker arm assembly (D), as shown. Raise stud (C) with the fingers as far as possible. In doing so, lug (F) contacts the carriage case (E) and leaves a slight mark as indicated by (G).
- 2 - Center punch this mark.
- 3 - Drill a hole through the case with a #50 drill, using the center punch indent as a guide.
- 4 - From the outside of the case enlarge the hole with a #49 drill and tap it with a 2-64 tap.
- 5 - Install nut (B) on screw (A) and insert (A) in the case to suit and tighten (B) securely.

NOTE: To allow for free movement of rocker arm (D) after installing screw (A), it may be necessary to grind (D) at (F).

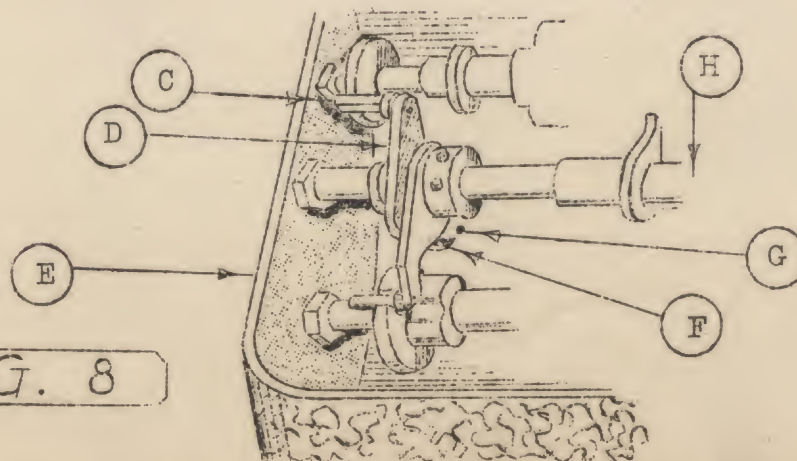
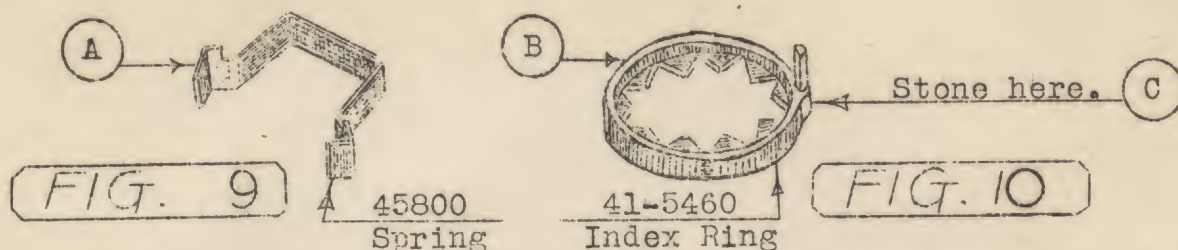


FIG. 8

If a wrong number registers after a clearing operation, or if numbers register when clearing and no constant is set in, it is caused either by springs (A) being broken or too weak. If the index rings (B) are made of steel they should be replaced by the newer brass rings. If spring (A) is made of steel it should be replaced by the new beryllium bronze spring. When the inside of the dial shows that the index ring (B) has been rubbing against it, the ring should be stoned at (C).

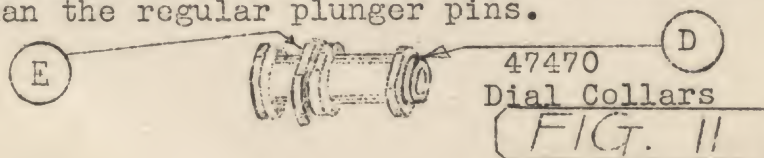


It is important that the bottom of the index ring (B) be free from burrs, both where the pin is riveted and around the edges of the teeth. When the spring is assembled to the dial, the ends should be bent correctly and the ring should be carefully assembled, as shown in Bulletin No. 161-D, Plate 50. When the dial is assembled to the collar, if care is not used, the ends of the spring, which should act on the teeth of the ring, may slip out and get between the ring and the inside of the dial. This is especially likely to occur with the eleventh dial.

If wrong figures are registered when the constant is being set into the carriage, it may be due to springs (A) being too weak, strong or broken. Faulty dial plunger action will also cause this trouble.

The left hand ends of the dial collars (D) have been reduced slightly in diameter so that they may be assembled more easily. If collars (D) have a flat on the flange which form a bearing for the index ring (B) the corners (E) on the left side should be broken with a stone.

NOTE: The plunger pins for the first ten dials on LA-6-W machines are shorter than the regular plunger pins.



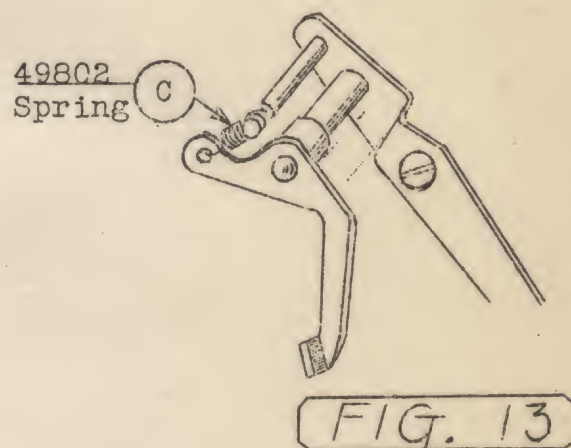
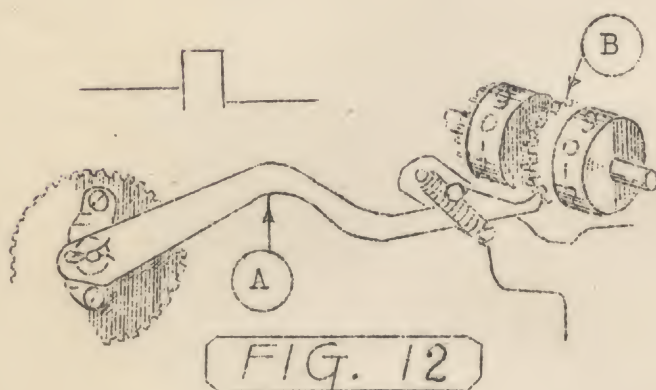
After the shaft is assembled, if the dial is held and the clear pin displaced either way with the finger, it should immediately snap back into position when the finger is removed. If the ring (B) is sluggish it is caused by too harsh an action; i.e., there are burrs, or the ring is rubbing against the inside of the dial. Also, it should be possible to turn the dial by means of the clear pin without an appreciable displacement of the pin in relation to the dial. If this cannot be done, it shows that the spring (A) is too weak. If the dial mechanism appears to be correct and the correct number is not registered when setting the constant in the carriage, the condition may be remedied at times by setting the carriage slightly forward or rearward.

Figure "9" Remaining in Multiplication Counting Dial:-

If the Figure "9" is left in the multiplication counting dial and it is certain that the carriage locks and lock cams are adjusted and function properly (See Plate 27, Machine Service Bulletin No. 161-B) the trouble is caused by insufficient impulse for the carriage shift. Any hesitation in the shift may cause a "9" to be left in the dial. Therefore the automatic shifting mechanism on the left hand side of the machine should be adjusted to give more power to the shift.

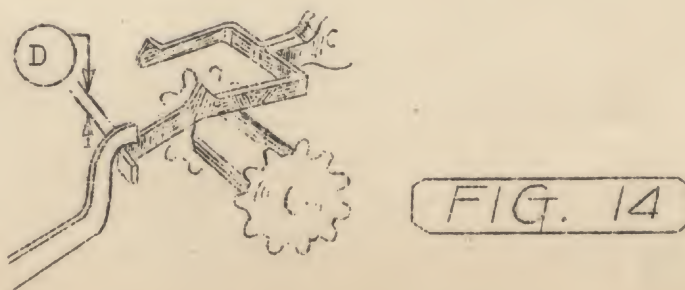
NOTE: Delay in shifting causes only the "9's" to be left in the dial.

If a "1" is left in the multiplication counting dial, arm (A) is not in correct adjustment with (B), or spring (C), 49802, is too strong.



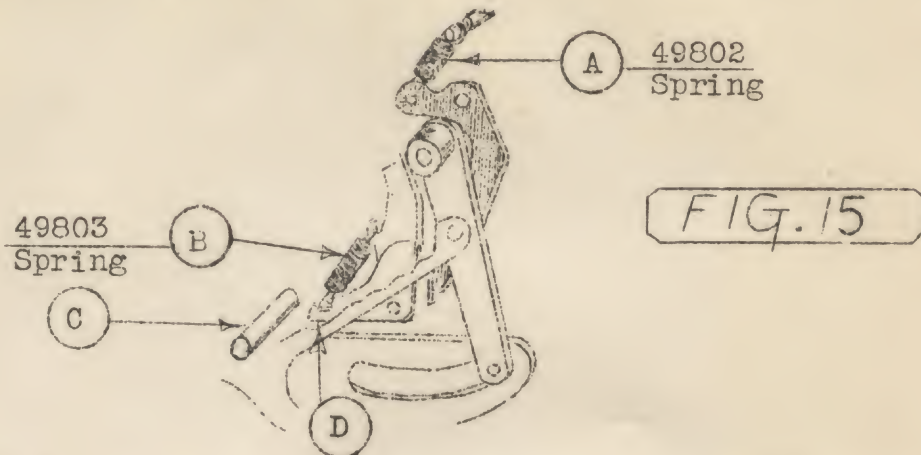
If, after the multiplication counting dial has been returned to zero the machine continues to run in the forward direction, or if the machine continues to run in a forward direction when the carriage shifts to either of the first two column, (D), Plate 8, is not adjusted close enough to the carry pin. NOTE: Whenever changing this adjustment, it is necessary to change the adjustment of (H) by bending (G). See Plate 8.

Excess clearance at (D) may also cause this trouble. See Figure 14.



Mechanism Trips and Shifts Before the Registering Dial Opposite The Right Hand Arrow On The Keyboard Comes to Zero. NOTE: This Dial Is Known as The Multiplication Dial:--

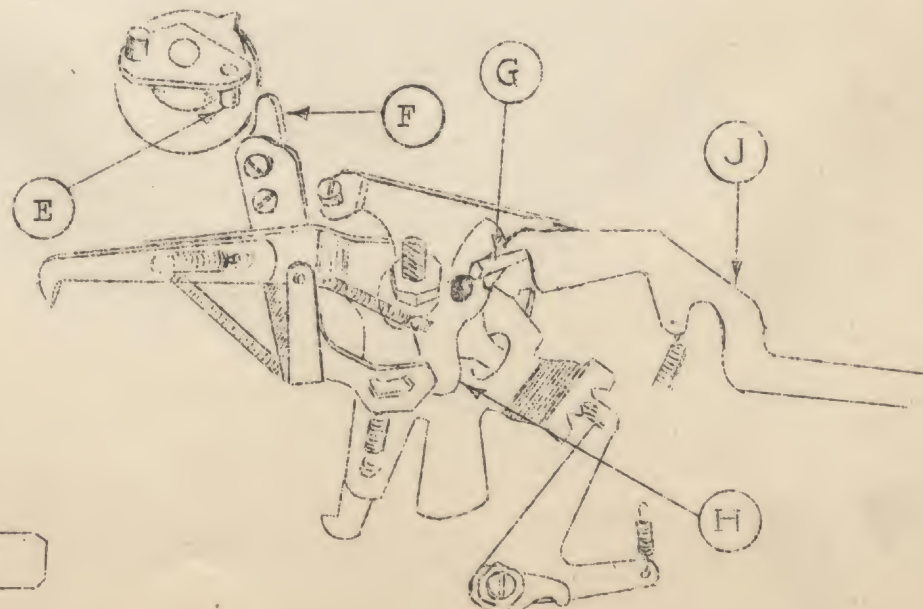
If the mechanism trips and shifts before the multiplication counting dial comes to zero, ascertain if spring (B) is too strong. If so, it should be weakened. If this does not remedy the trouble, spring (A) should be strengthened. However, if (A) is too strong, the figure "1" will be left in the same dial after multiplication. If adjusting the spring tension of these two springs does not remedy the trouble, the clearance (J), Plate 8, should be increased.



If a machine makes one or more reverse cycles after shifting in multiplication, latch (D) is adjusted too far from pin (C), or there is too much clearance at (J), Plate 8.

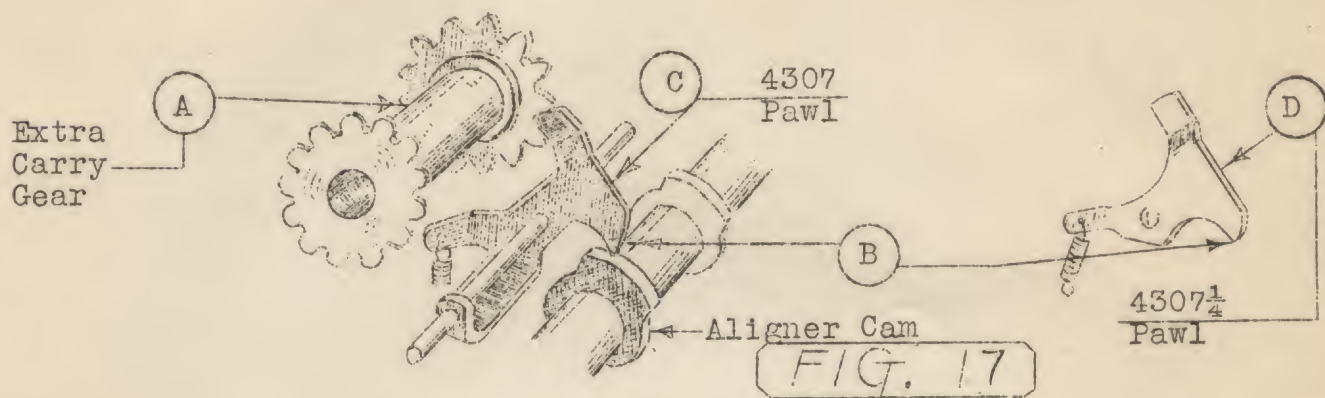
If the machine continues to run forward after the carriage has shifted to the first column in multiplication, pin (G) on end of the division lever is not properly adjusted by the division lever click (J) in relation to latch (H), to reset the clutch yoke trip arm to neutral.

If the machine should shift and stop in either multiplication or division, (F) is not properly adjusted to (E).



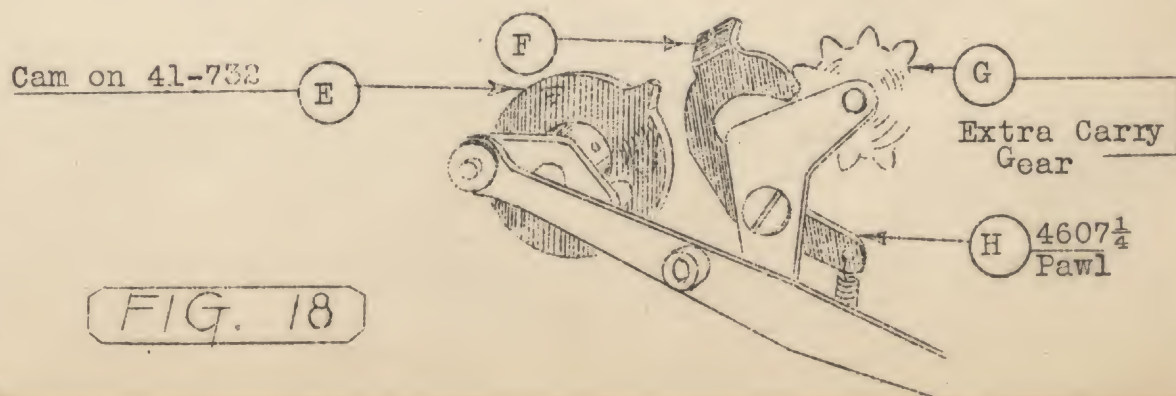
Nines Do Not Clear Out in Lower Dials, Caused By Through Carry Unit Locking Up:-

When the aligner cams are in position to lock the pawls, the extra carry gears should have a very slight amount of play. To overcome a condition whereby too much clearance exists at this point, peen the pawl (C) or (D) at (B) to suit. In some cases the installing of new pawls may remedy this condition.



Often, binds in the extra carry gears (A) are the cause of the unit locking up. Therefore, it is advisable to determine the freedom of these gears by disengaging pawls (C) and (D) from them.

A condition occurs occasionally wherein one of the pawls (C) is locked against the extra carry gear before the cam (E) on the 41-732 of the carry shaft has positioned pawl (H) into full engagement with the First extra carry gear (G). To remedy such a condition bend lug (F) slightly forward or rearward to hasten its engagement with (E) in accordance with the direction in which the machine was operating when this trouble occurred.



Nines Do Not Clear Out IN Lower Dials, Caused By Through Carry Unit Locking Up:-

Another method of remedying this condition is to remove stock from the aligner cam shaft driver at (A) to delay the cycle of the shaft.

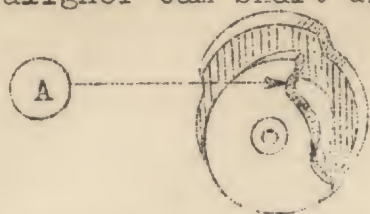


FIG. 19

Care should be taken that too much stock is not removed at (A) as this will delay the aligner shaft to such an extent that the carriage locks will release before the carrying to the left end of the carriage is completed, thus causing the carriage dial gears to be thrown out of mesh with the extra carry gears of the unit before the carry is completed, thereby resulting in an error in the answer.

Adjustments

Plate 9

The eccentric screw stud (E) on Plate 9, should be adjusted so that roller (Q) does not contact the aperture in link (F) when slide (G) is unlatched from (P). Machines not equipped with a 49105 stopping blank shown as (M), should have this feature installed. After installing blank (M), neutralize the division and multiplication levers and adjust blank (M) to the end of link (F) so that .015 clearance exists at (U). After the proper adjustment has been made, tighten the tie rod screw (N) securely. To test this adjustment throw the division lever in and snap it out of the divide position. When it is restored to neutral, link (F) should not contact roller (Q) enough to cause any upward movement of (G).

Screw (R) should be adjusted in slot (S) so that when the multiplication lever (T) is thrown into operating position and roller (Q) raises (G), excess movement exists after (G) latches on (P).

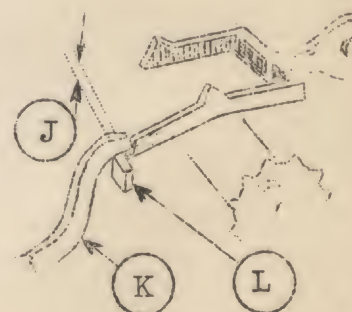
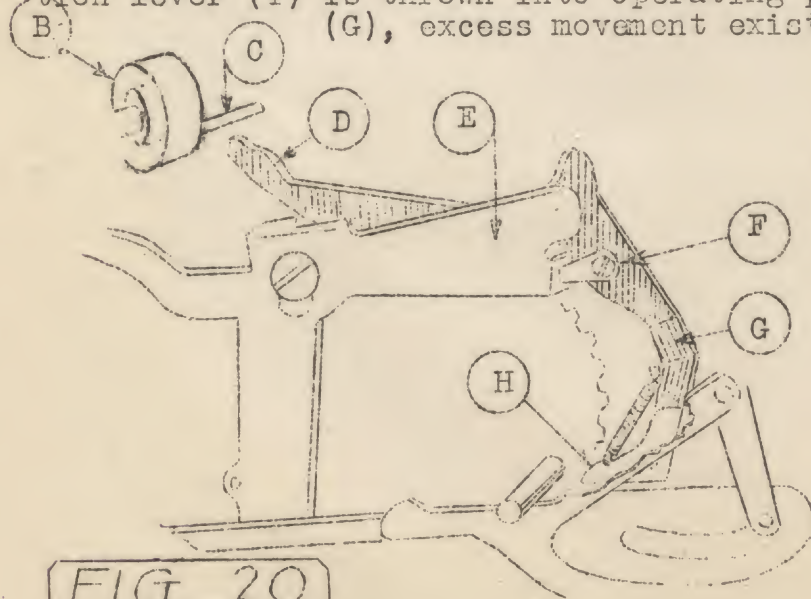
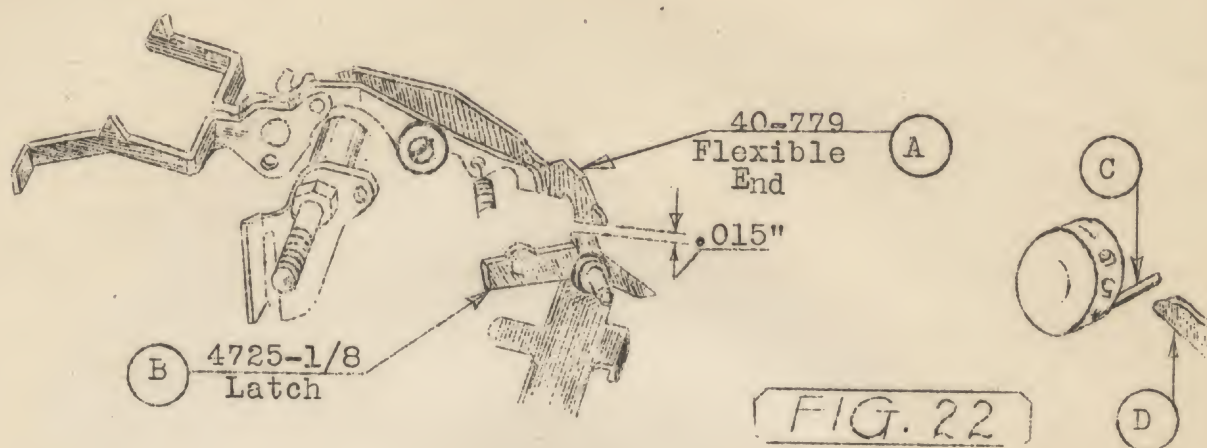


FIG. 21

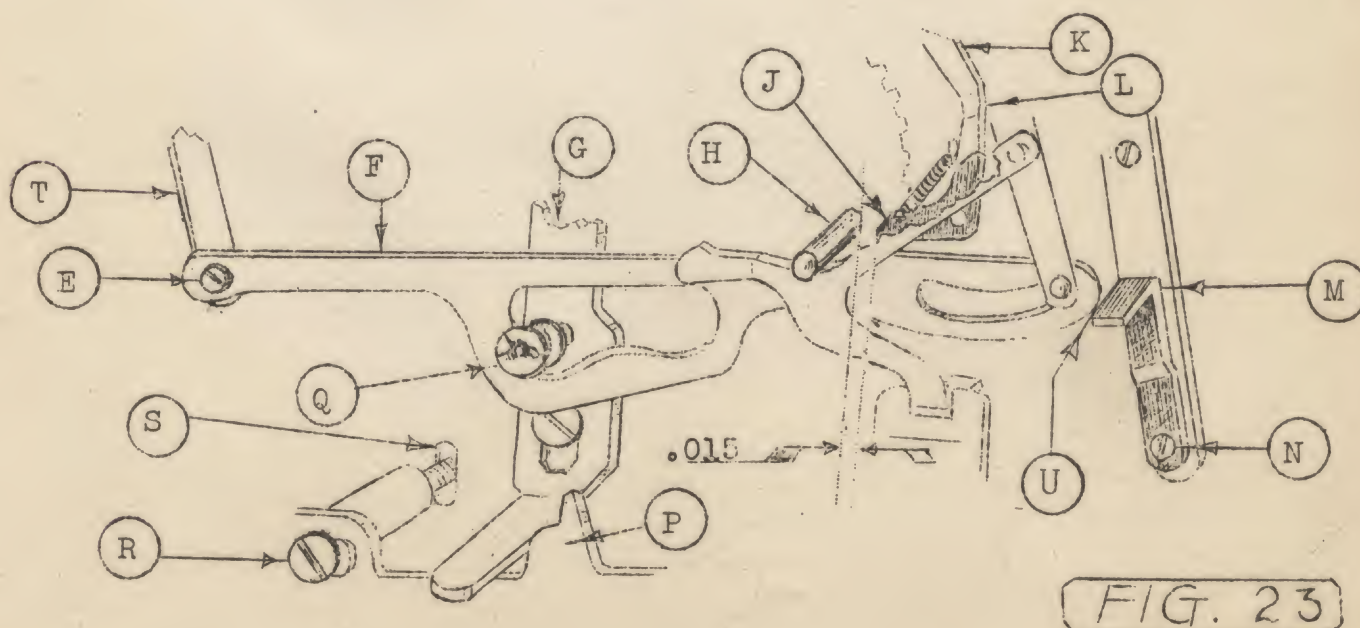
Adjust blank (F) so that when dial (B) is at zero and slide (E) is unlatched, (D) will clear pin (C) by approximately $1/32$ ". When clearance exists at (J) and (E) is latched upward, turn dial (B) to zero and raise the carriage. See That the automatic left hand side mechanism is set to neutral.

Adjustments:

With the carriage in operating position note that when pin (C) settles on the end of (D) the flexible end (A) of the trip lever is raised more than enough to unlatch (B). This excess movement of (A) should be approximately .015.



When the multiplier slide (G) is unlatched from (P), pin (H) should clear (J) by approximately .015. When the multiplier slide (G) is latched on (P) and the machine turned backwards, pin (H), upon engaging the end of (J), should trip the automatic mechanism so that the machine will not make a complete reverse cycle. When the machine is turned forward, pin (H) engages latch (J) causing it to yield and no tripping of the automatic mechanism occurs. To adjust (J) to (H) bend (K) at (L).



Adjustments:-

Bend lug (A) forward or rearward so that when the multiplier slide (B) is latched up and the division lever returned to neutral, pin (D) will cam (C) and slide (E) will unlatch (A) before the hand crank is positioned one-quarter of a turn forward. When the multiplication and division levers are in operating position, pin (D) should clear (C).

Plate 8

If the machine is run forward with the multiplication lever in the operating position, lever (K) very often moves up and down. This movement is allowed for by clearance (J). The movement of (K) should not cause (L) to move.

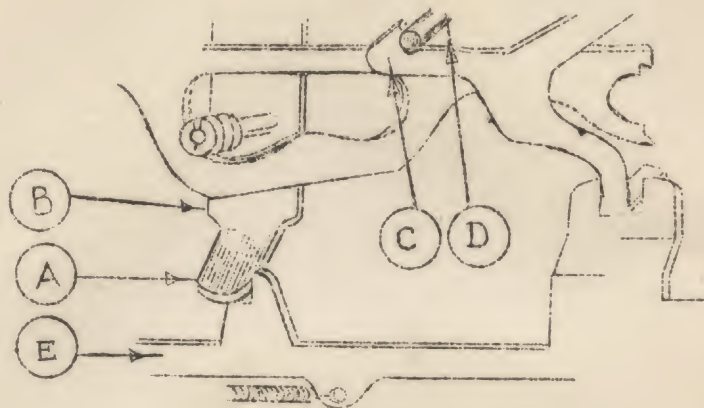


FIG. 24

The unit carriage lock (G), if distorted, may not function properly in relation to the carriage lock ledge (F). This should be corrected by readjusting (G) to (F) and tightening screw (H) securely. It is advisable to check the lock for free movement without spring tension.

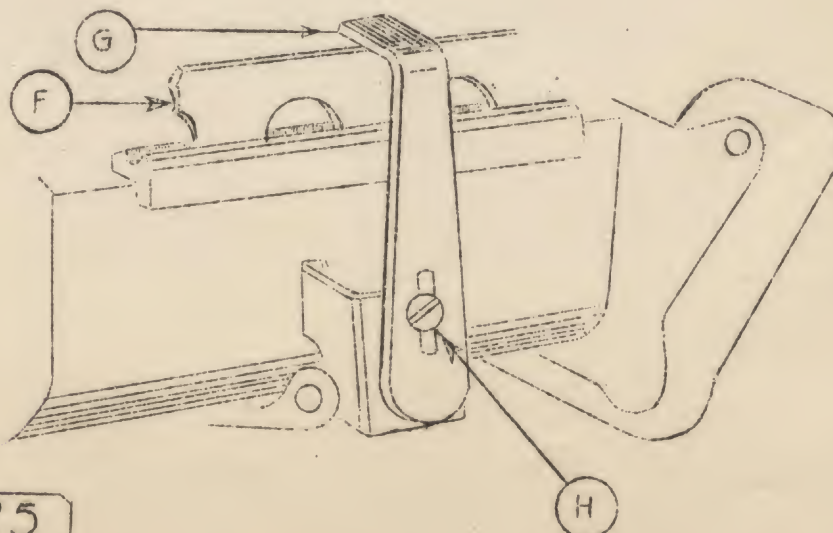
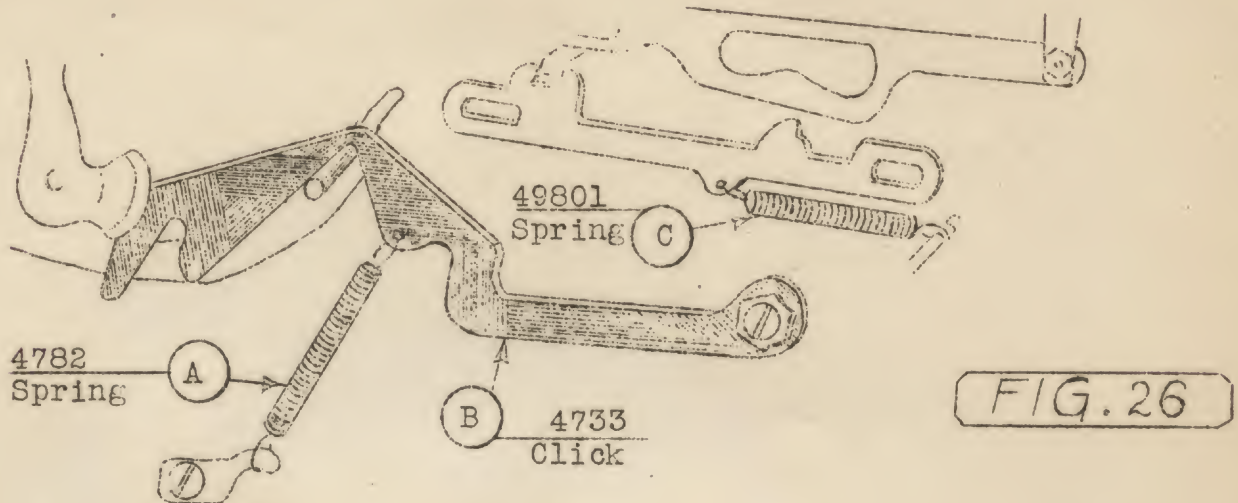


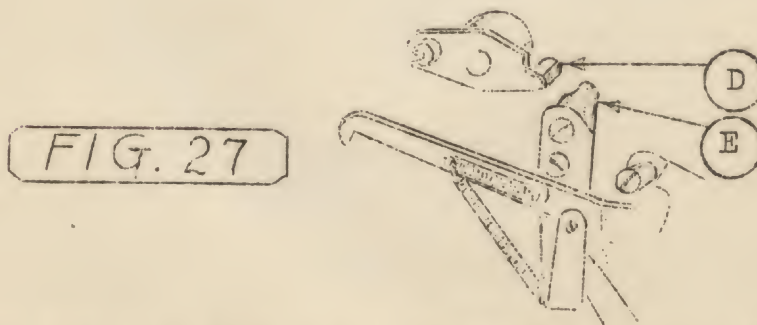
FIG. 25

Adjustments:-

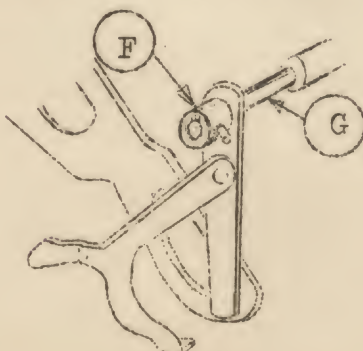
The new style division lever click (B) should be installed in all machines. (See Machine Service Bulletin No. 161-B, Plate 28.) Upon installing the new click it is important that spring (A), 4782, is of standard length and tension. Therefore, if the original spring has been shortened, replace it. It is also necessary to replace (C), 49801, with a 788 spring.



A good adjustment of the clutch yoke trip arm (E) with stud (D) is important.

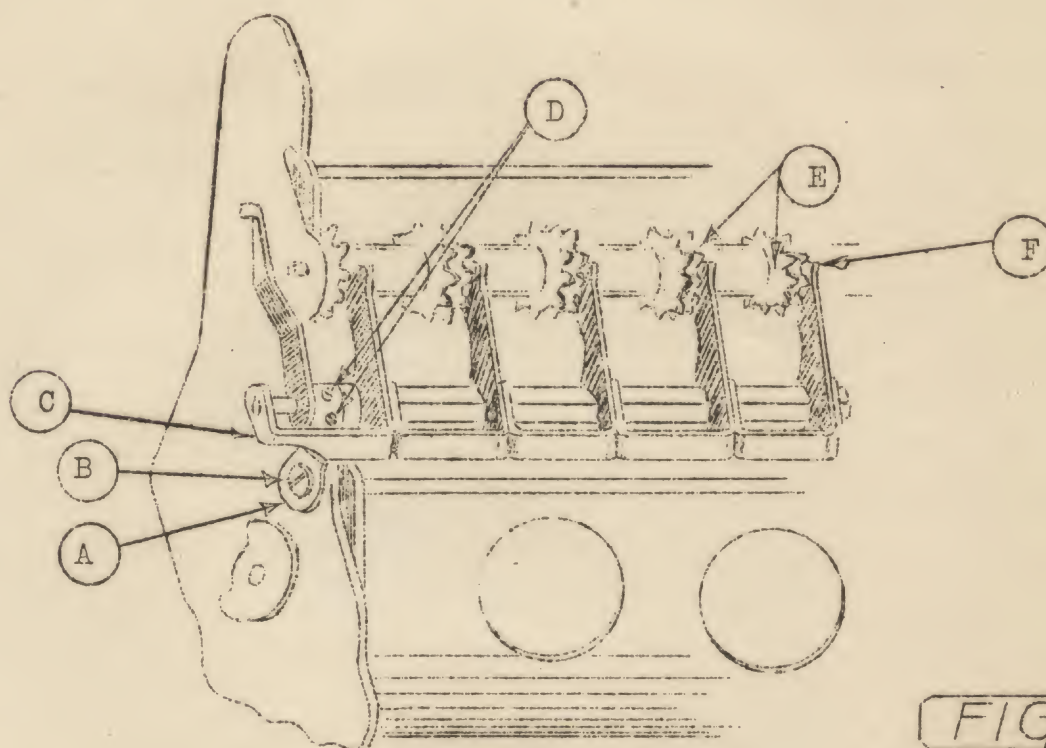


Ascertain that the right hand ends of hub (F) and shaft (G) do not interfere with the cover case, 41-660. To remedy this condition grind the face of hub (F) and shaft (G).



If at the end of subtraction in automatic division, or at the end of the forward correction cycle, the machine should continue to run, trip levers (F) are adjusted too low.

If in automatic division, the machine should reverse itself before the division is complete in a column, the trip levers (F) are adjusted too high.



The points of trip levers (F) should extend slightly below the surface of the teeth on gears (E). Holding the points at this position, loosen (B) and place blank (A) up against the fold of arm (C) and tighten screw (B) securely. Loosen screws (D) and position arms (F) upward or downward in relation to the regular trip lever. After the desired adjustment has been made tighten screws (D) securely.

F. M. Smith

FMS:TG

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